

TECHNICAL REVIEW DOCUMENT
For
RENEWAL OF OPERATING PERMIT 95OPWE039

DCP Midstream – Spindle Gas Plant
Weld County
Source ID 1230015

Prepared by Bailey Kai Smith
June - August, 2011

I. Purpose

This document establishes the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed Operating Permit for the Spindle Plant. The previous Operating Permit for this facility was issued on May 1, 1999, was last revised on June 26, 2002 and expired on May 1, 2004. However, since a timely and complete renewal application was submitted, under Colorado Regulation No. 3, Part C, Section IV.C all of the terms and conditions of the existing permit shall not expire until the renewal operating permit is issued and any previously extended permit shield continues in full force and operation.

This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted on January 13, 2009, previous inspection reports and various email correspondence with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This plant is classified as a natural gas processing plant as set forth under Standard Industrial Classification 1321. The Spindle Gas Processing Plant consists of a gas processing skid and a fractionation assembly. The gas processing skid utilizes straight refrigeration coupled with cryogenic expander processes to recover natural gas liquid (NGL) mixtures from the inlet gas stream. The NGL stream is sent to the fractionation

assembly to make various fuel products. A high Btu content methane/ethane residue gas stream is created by the removal of the NGL. The residue gas stream is recompressed and routed to the sales pipeline. A triethylene glycol (TEG) dehydration system operates to dehydrate a slip stream of the residue gas used to regenerate the mole sieves. The mole sieves function to dehydrate the inlet gas.

The fractionation assembly separates the NGL product from the gas plant into pure streams consisting of ethane, propane, and butane/gasoline mix (BG Mix). The ethane is recompressed and routed to the pipeline. The propane and BG mix are each stored in pressurized bullet tanks for transport off-site by truck.

This Title V Operating Permit for the Spindle Plant also addresses the adjacent Spindle-CIG Booster Station previously owned by Colorado Interstate Gas, Inc.

There are twelve (12) engines powering natural gas compressors operating in inlet, residue, refrigeration or air compressor service. As noted previously, one TEG dehydration unit operates to remove the water from the residue gas used to regenerate the mole sieves. The site also operates with a 15 million Btu per hour hot oil heater, one condensate loadout rack, and four (4) 300 barrel condensate storage tanks. Fugitive VOC emissions from the entire facility are subject to the leak control provisions of Subpart KKK.

The plant is located west of Fort Lupton in Weld County, Colorado. This facility is located in an Area classified as attainment for all pollutants except ozone. It is classified as non-attainment for ozone and is part of the 8-hr Ozone Control Area as defined in Regulation No. 7, Section II.A.1. There are no affected states within 50 miles of the plant. Rocky Mountain National Park is a Federal Class I designated area within 100 kilometers of the plant.

This facility is categorized as a NANSR major stationary source (Potential to Emit of VOC and NO_x \geq 100 Tons/Year). Future modifications at this facility resulting in a significant net emissions increase (see Reg 3, Part D, Sections II.A.26 and 42) for VOC or NO_x or a modification which is major by itself (Potential to Emit of \geq 100 TPY of either VOC or NO_x) may result in the application of the NANSR review requirements.

This facility is categorized as a PSD major stationary source (Potential to Emit \geq 250 Tons/Year) for NO_x and CO. Future modifications at this facility resulting in a significant net emissions increase (see Reg 3, Part D, Sections II.A.26 and 42) or a modification which is major by itself (Potential to Emit of \geq 250) for any pollutant listed in Regulation No. 3, Part D, Section II.A.42 for which the area is in attainment or attainment/maintenance may result in the application of the PSD review requirements.

Emissions (in tons/yr) at the facility are as follows:

Emission Unit	NO _x	CO	VOC
Waukesha 1232HP Engine P160	39.6	39.6	9.7
Waukesha 1232HP Engine P161	39.6	39.6	9.7
Waukesha 1232HP Engine P162	23.8	39.6	9.7
Waukesha 1232HP Engine P163	23.8	23.8	6.0
Waukesha 1000HP Engine P164	19.3	38.6	9.7
Waukesha 1000HP Engine P165	39.6	39.6	9.7
Waukesha 1232HP Engine P166	39.6	39.6	9.7
Caterpillar 230HP Engine P168	5.0	5.0	2.2
Waukesha 1000HP Engine P169	19.3	29.0	9.7
Superior Ajax 1215HP Engine P170	23.5	46.9	23.5
Superior 600HP Engine P171	11.6	17.4	5.8
Weatherford Dehy P178			21.3
Hot Oil Heater P179	6.3	5.3	
Fugitives P181			28.9
Condensate Loadout P182			43.3
Condensate Tanks P183			18.0
Superior 474HP Engine CIG-S-2	22.9	22.9	4.6
Total Facility Potential to Emit	313.9	386.9	221.5
Actual Emissions (5/09 – 4/10)	216.2	264.7	111.1

Greenhouse Gases

Greenhouse gas emissions from this facility are less than 100,000 TPY CO₂e. Future modifications greater than 100,000 TPY CO₂e may be subject to regulation.

Compliance Assurance Monitoring

Pre-controlled NO_x and CO emissions from each of the eight (8) Waukesha Model L-7042 GSI engines are above the major source level. The control devices on the engines are used to meet their NO_x, and CO emission limitations, therefore CAM applies to these units.

III. Discussion of Modifications Made

Source Requested Modifications

The source has submitted the following information in relation to the renewal operating permit.

Mod 1 (4/14/2003): APEN received requesting a change in emissions limitation for engine P168/C217.

Renewal (5/1/2003): The application requested the removal of the requirement to conduct Methane/Ethane composition analysis. DCP justified that the results of such analyses have shown little fluctuation in the gas composition. The renewal application also requested the notification period for the replacement AOS be extended to 14 days.

Amendment (6/23/2003): The application was amended to correct several clerical errors.

Mod 2 (10/20/2004): The minor modification application requested a change in emission factors for the condensate loadout from 4.42 lb VOC/1000 gallons to 5.76 lb/1000 gallons. There were no requested changes to the emissions or throughput limits.

Mod 3 (11/22/2004): DCP submitted a construction permit application on October 20, 2004 for several atmosphere condensate tanks that were previously exempt from permitting. This modification added the four condensate tanks to the operating permit with a throughput of 4.467 Mgal/yr and emission of 4.7 tpy VOC.

Mod 4 (3/25/2005): An APEN was submitted for P170/C212, a Superior 1215 HP lean burn engine. The APEN requested lower emission limits accounting for the oxidation catalyst, which was installed pursuant to Regulation No. 7 Section XVI.A.2.

Mod 5 (4/28/2005): APEN received requesting a change in emission limits for the glycol dehydrator. The change in emissions is a result of installed control equipment. The APEN also changed the design capacity for the unit.

Mod 6 (8/24/2005): Requested to combine the two fugitive emissions points, P181 (2.5 tpy VOC) and P181A (7.8 tpy) which are both subject to Subpart KKK. Also requested that emissions for the combined point increase from 10.3 tpy to 11.6 tpy. The Division notified the source that the application was incomplete. Additional information was not provided, so the previous limits remained in effect.

Mod 7 (7/10/2006): This modification was received by the Division on March 27, 2007 and requested a 6 Mgal/yr condensate throughput limit for both the condensate tanks and loadout. The modification resulted in a tank emissions increase from 4.7 tpy VOC to 6.3 tpy and loadout emissions increase from 13.8 tpy to 17.28 tpy.

Admin(4/2/2008): An administrative modification to update the responsible official was submitted on April 2, 2008.

Mod 8 (4/30/2008): APEN received for AOS permanent replacement for engine P164/C139. The APEN requested emissions for the replacement engine lower than

original unit. The requested emission limitations comply with the requirements in Reg 7 Section XVII.E.2 for relocated engines.

Mod 9 (4/21/2009): APEN received for AOS permanent replacement for engine P162/C138. The APEN requested emissions for the replacement engine lower than original unit. The requested emission limitations comply with the requirements in Reg 7 Section XVII.E.2 for relocated engines.

COC (4/24/2009): Compliance Order on Consent (Case Nos. 2009-207) was issued after a 2008 explosion on site that damaged an engine. The COC allowed DCP to operate a temporary flare to control condensate stabilization emission until the electrical system was repaired and to immediately replace the damaged engine with a replacement that reduced emissions.

Mod 10 (7/31/2009): This minor modification requested a condensate throughput increase from 6 Mgal/yr (per Mod 7 requested increase) to 18 Mgal/yr for both the tanks and the loadout. The emission calculations used emission factors inconsistent with Mod 2 and Mod 3. The Division considers this change in methodology on the submitted supporting calculations a requested change. Accordingly, the tank emissions limit increased from 6.3 tpy VOC to 17.96 tpy and the loadout emission limit increased from 17.28 tpy to 43.33 tpy.

Cancellation (6/21/2010): Request to cancel APEN for engine P167/C150.

Mod 11 (7/19/2010): A minor modification to the fugitive emissions requested a VOC emissions limit increase to 28.9 tons/yr. The supporting material identified this change as a result in component count and a recent gas analysis. This modification treated the fugitive emissions as a single point, as requested in the incomplete Mod 6 application. The Division is considering this a new request to combine the points.

Mod 12 (8/19/2010): Request to roll in Construction Permit 09WE0195 into the Title V permit, with exception of MACT Subpart ZZZZ conditions. This construction permit was issued for replacement of the damaged engine, P163/C147, per the COC.

Mod 13 (3/17/2011): This minor modification requested a change in the site horsepower rating (and brake specific fuel consumption) for several engines and a small throughput increase from 78.6 MMScf/yr to 78.66 MMScf/yr. The application also included updated serial numbers for several replacement engines.

AOS: In addition to the above modifications, the alternative operating scenario for replacing engines has been exercised many times since the last renewal. DCP has informed the Division of these replacements and associated applicable requirements for each of the replacement engines.

Note that while several modifications have been incorporated into the operating permit in one action, each of these modifications is considered a separate project for purposes of determining the applicability of PSD/NSR requirements.

The source's requested modifications were addressed as follows:

Page following cover page

- Revised the responsible official and permit contact information in accordance with information submitted on April 2, 2008.
- The change in company name from Duke Energy Field Services to DCP Midstream, LP was reflected in the permit.

Section I – General Activities and Summary

- The most recent version of the AOS provisions has been included. This version requires notification within fourteen days of commencing operation of the replacement engine.
- The serial numbers for the engines that have been replaced under the AOS was updated. These serial numbers are listed in the summary of emissions units table. The horsepower listed in this table has also been updated in accordance with Mod 13.

Section II – Specific Permit Terms

- The extended gas analysis requirement will remain in the permit. Periodic gas analyses are necessary to monitor compliance with emissions limitations.
- Set the condensate loadout emission factor to 4.81 lb/1000 gallons loaded based on the most recent AP-42 equation parameters.
- Engine P167/C150 was removed from the permit per the cancellation letter.
- The emission limitations were lowered for engine P168/C217, P171/C212, P164/C139 and P162/P138 as requested in Mod 1, Mod 4, Mod 8, and Mod 9, respectively.
- Changed design capacity for the glycol dehydrator from 15 MMscf/day to 10 MMScf/day and lowered emission limits to reflect control equipment in accordance with Mod 5.

Note that the flare used for secondary control is not subject to the requirements in § 60.11 or § 63.11 since the flare is not used to comply with NSPS or MACT standards.

- The condensate tanks were added to the permit as requested in Mod 3. The emissions and throughput limits were set in accordance with values requested in Mod 7. The tanks have potential uncontrolled emissions of 17.96 tons per year and are therefore exempt from Reg 7, Section XII under XII.A.5, which exempts sources from the applicability condition in Section XII.
- The increases to the condensate loadout throughput and emissions per Mod 7 have been included in the permit.

- The COC required certain control efficiencies for the P163 engine. These requirements are embedded in the emissions factors and annual limits set forth by the permit.
- The fugitive emission points were combined as requested in Mod 11. The new single emission point has an emission limitation of 28.9 ton/yr and is subject to the requirements of NSPS Subpart KKK. AIRS point 064 has been removed.
- The construction permit 09WE0195 was rolled into the Title V permit as requested in Mod 12. The permit incorrectly identified the facility as major for hazardous air pollutants. The modification application submitted on August 19, 2010 specified that no control or testing requirements apply for area source. An amendment to NESHAP Subpart ZZZZ was published in the Federal Register on August 20, 2010 that applies to existing stationary spark ignition engines located at an area source. The appropriate NESHAP Subpart ZZZZ requirements applicable to the replacement engine P163 have been included in the Title V operating permit.

The AIRS ID of engine P163, which was replaced per the COC, was updated. The emission limitations were changed per Colorado Construction Permit 09WE0195. All other requirements from construction permit 09WE0195 have been included in the Title V operating permit.

- Engine emission factors in the calculation table in g/hp-hr were removed. The emission factors are based on a lb/MMBtu value. The appropriate emission factors to use in the emissions calculation equations are included in the specific condition table for each engine.

Appendices

- The most recent facility plot plan was included in Appendix A.
- An updated list of insignificant activity, as submitted via e-mail on July 28, 2011, was included in Appendix A of the permit.

Other Modifications

In addition to the source requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal. These changes are as follows:

Page Following Cover Page

- It should be noted that the monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it

should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

- Modified the language concerning postmarked dates for report submittals to reflect the Division's current standard language.

Section I – General Activities and Summary

- Revised the language in Condition 1.4 include current conditions that are state-only enforceable.
- Updated Condition 3.1 (status of source with respect to NANSR and PSD requirements) to reflect Division's current standard language and current Regulation No. 3 citations.

Section II – Specific Permit Terms

- The underlying construction permit, 97WE0287, referenced throughout the Title V was never issued. The construction permit was never in effect and the source never received a copy of this document, therefore all references to the construction permit were removed from the Title V permit.

Engines

- The engine's annual emission and throughput limits were rounded to the tenths for consistency.
- A requirement for monthly recording of hours of operation was added. This is a parameter necessary for calculating natural gas consumption of each engine.
- The engines with a site rated horsepower greater than 500 HP are subject to the control equipment requirements in Reg 7 Sections XVI and XVII. The requirements in Section XVII are state-only and were streamlined from the permit.
- Several engines were required to install control equipment pursuant to a Compliance Order on Consent (Case No. 1998-033). As mentioned in the technical review document for the original permit issuance, portable monitoring requirements should be included in the permit when the engine controls and new permit limits were added. The permit was modified on November 19, 2001 to incorporate the controls and did not include portable monitoring requirements where applicable. This oversight was corrected and the appropriate monitoring requirements were included. The Division considers quarterly monitoring adequate periodic monitoring for these engines. The semi-annual monitoring interval was kept for all engines that were subject to portable monitoring requirements in the last issuance of the Title V permit.
- An amendment to NESHAP Subpart ZZZZ was published in the Federal Register on August 20, 2010 and applies to existing stationary spark ignition engines located at an area source. The appropriate NESHAP Subpart ZZZZ

requirements applicable to the engines have been included in the Title V operating permit.

Hot Oil Heater

- The annual emissions limitations for SO_x, VOC, and PM were removed. The potential uncontrolled emissions were below the de minimus reporting levels.
- The emission factors for this unit were based on an outdated version of AP-42. The most recent emission factors from AP-42 were included in the permit and new limits were set in accordance with those emission factors.
- This unit was previously identified as not subject to the requirements of NSPS Subpart Dc. The explanation for this determination was that APENs had identified the unit as constructed at an unknown date prior to the Subpart Dc applicability date of June 9, 1989. APENs filed on March 3, 1997, April 3, 2002, and February 16, 2007 all report the unit as installed in 1994 and therefore the heater is applicable to the requirements of NSPS Subpart Dc. The appropriate requirements were included in the renewal permit.
- This heater is subject to the NSPS General Provisions in Reg 6 and these provisions have been included in the permit.
- The hot oil heater is also subject to Reg 6 requirements for fuel-burning equipment in Part B, Section II.C. These requirements for PM emissions and opacity are equivalent to the Reg 1 requirements; however, they do not apply during periods of startup, shutdown and malfunction. Therefore, the less stringent Reg 6 requirements were streamlined from of the permit.

Dehy

- The Reg 7 Section XVII.D requirement to install control equipment was added to the permit and identified as a state-only condition.
- The Division's standard language for glycol dehydrators was included in the renewal permit. The maximum BTEX levels were set using the values used in the GLYCalc run that was used to set the permit limits.

Fugitive

- Removed the requirement to submit a NSPS KKK summary report. This report has already been submitted.

Also removed the requirement in Condition 7.3.2 to record startup, shutdown and malfunctions in § 60.7. NSPS Subpart KKK in § 60.635(a) references § 60.486(k), which indicates that § 60.7(b) does not apply.

Loadout

- The statement to correct VOC emissions for nonmethane nonethane VOC was removed. VOC is already exclusive of methane and ethane emissions.

Other

- Initial compliance testing requirements in Condition 9 were removed. The time period for which compliance testing was required has since passed.
- Condition 10 regarding documents required was removed. The condition did not include specific requirements nor did it reference which documents it applied to.
- Condition 11 on reporting was removed. This language is now included on the page following the permit's cover page.
- The calculations in Condition 12 were removed and included under each specific emission unit.

The conversion equations for stack flow data and portable monitoring calculation were removed from the permit. This information can be found on the portable monitoring info on the website.

- Removed the upset and breakdown in Condition 13. This is already included in the General Permit Conditions, Section IV of the permit under Condition 3.g.
- Updated portable monitoring requirements in Condition 14 with the most current Division approved language.
- Catalytic converter Condition 15 and Condition 16 regarding the air/fuel ratio controller were removed. Management practices and monitoring requirements for the control equipment are included in the specific conditions under each emission unit. The standard Title V language was included, which requires parametric monitoring on a monthly basis.
- The opacity requirements in Condition 17 were moved under the specific applicable emission units. Additionally, the permit did not identify all applicable opacity requirements. Specific activities under which the 30% opacity standard applies are: building a new fire, cleaning of fire boxes, soot blowing, startup, any process modification, or adjustment or occasional cleaning of control equipment. Based on engineering judgment the Division considers that building a new fire, cleaning of fire boxes and soot-blowing does not apply to the operation of an internal combustion engine. Although the engines have a control device, it does not control PM emissions and therefore would not affect opacity emissions. Process modifications may apply to the engines; however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Therefore, the 30% opacity requirement has been included in the operating permit only for startup of the units. However, compliance with the opacity limits is still presumed given that natural gas is the only fuel used in the engines.

Section III – Permit Shield

- Updated the Reg 3 Citation for the permit shield

- The renewal application requested many non-applicable requirements to be identified in the permit shield. Some of these non-applicable requirements were in fact applicable. Additionally, there were several identified non-applicable requirements that were obvious and unnecessary to be identified in the permit. The purpose of the permit shield is to clarify situations where it is possible the stated conditions could apply. Clearly non-applicable requirements were not included in the permit.
- The permit shield condition from Subpart Dc for the hot oil heater was removed. This unit was not in place prior to the Subpart Dc applicability date of June 9, 1989 as discussed above.

Section IV – General Permit Conditions

- Updated the general permit conditions to the current version (5/22/2012).

Appendices

- Updated Appendices B and C (Monitoring and Permit Deviation Reports and Compliance Certification Reports) to the newest versions (2/20/2007).
- EPA's mailing address was revised in Appendix D.
- Cleared the list of modifications from Appendix F related to the previous issuance.
- The most recent AOS applicability reports were added in Appendix H.
- CAM requirements for the eight Waukesha Model L-7042 GSI engines were added to Appendix I.